

VORONITSYN, K.I., kand. tekhn. nauk, red.; TIZENGAUZEN, P.E., kand. tekhn. nauk, red.; NADBAKH, M.P., red.; TANTSEV, A.A., starshiy nauchnyy sotr., red.; ABRAMOV, S.A., kand. tekhn. nauk, red.; ABRAMOV, D.A., red.; BOGDANOV, N.I., starshiy nauchnyy sotr., red.; VINOGRADOV, G.K., kand. tekhn. nauk, red.; GAVRILOV, I.I., starshiy nauchnyy sotr., red.; GUSARCHUK, D.M., starshiy nauchnyy sotr., red.; D'YAKONOV, A.I., red.; ZAV'YALOV, M.A., kand. tekhn. nauk, red.; ZARETSKIY, M.S., starshiy nauchnyy sotr., red.; KACHELKIN, L.I., starshiy nauchnyy sotr., red.; KISHINSKIY, M.I., kand. tekhn. nauk, red.; KOLTUNOV, B.Ya., starshiy nauchnyy sotr., red.; OSIPOV, A.I., kand. tekhn. nauk, red.; SHINEV, I.S., kand. ekon. nauk, red.

[Materials of the enlarged session of the Scientific Council of the Central Scientific Research Institute for Mechanization and Power Engineering in Lumbering on problems concerning power engineering and the electrification of the lumber industry]  
Materialy rasshirennoi sessii Uchenogo soveta TsNIIIME po voprosu energetiki i elektrifikatsii lesnoi promyshlennosti. Moskva, 1961. 75 p. (MIRA 15:4)

(Continued on next card)

VORONITSYN, K.I.---(continued) Card 2.

1. Khimki. Tsentral'nyy nauchno-issledovatel'skiy institut mekhanizatsii i energetiki lesnoy promyshlennosti. 2. Nachal'nik Tsentral'nogo byuro tekhnicheskoy informatsii lesnoy promyshlennosti (for Nadbakh). 3. Direktor Tsentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Voronitsyn). 4. Uchenyy sovet Tsentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for D'yakonov). 5. Nachal'nik otdeleniya energetiki i sredstv avtomatizatsii Tsentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti (for Zaretsky).

(Lumbering)

(Electric power)

1.11K

*Failure, Mechanisms of  
Solid State*

704. Tikhonov, N. V. On the question of the mechanism of fatigue failure of steel (in Russian). *Zh. tekhn. fiz.* 21, 2, 187-193, Feb. 1951.

Effects of fatigue on "Steel 20" with 31,000 psi endurance limit were made by counting the decreasing number of spots in x-ray patterns. As Barrett also reported ["Structure of metals," p. 59], spots become more diffuse with increasing numbers of cycles and with higher stresses, but no particular change occurs when the endurance limit is crossed. E. A. McCulloch, USA

100.10.100.10.10.10.

Gpsta i praktična kartografija; udzbenik. Beograd, Izd. Glavne geodetske uprave pri vladi FNR, 1949. 134 p. (General and practical cartography. Illus., maps, diagrs., tables)

SO: East European Accessions List, Vol 3, No 8, Aug 1954

$BC$ 

A. 1.

**Ignition of the electric discharge in gas.**  
G. A. TJAGUNOV (Bull. Acad. Sci. U.R.S.S., 1938, Sér.  
Phys., 453-458).—Theoretical. L. J. J.

A S S L A METALLURGICAL LITERATURE CLASSIFICATION

Country : USSR  
Category : Soil Science. General. J  
Abs Jour : RZhBiol., No 6, 1959, No 24569  
Author :  
Inst :  
Title :  
Orig Pub :  
Abstract : improve the physical properties of the soil.  
Content of the biologically active organic  
substance in the soil is visibly increased.  
-- A. M. Smirnov

Card : 2/2

DUDKO, D.A.; RUBLEVSKI, I.I. [Rublevskiy, I.I.]; TJAGIN-BELAUS, G.S.  
[Tyagin-Belaus, G.S.]; ALEKSIJEVIC, Aleksandar, inz., asistent.  
[translator] (Zagreb)

Influence of the consitions of the process of electric welding  
under slag on the size of metallic bath in the melting of big  
sections with electrodes. Zavarivanje 4 no.5/6:113-116 My-Je '61.

1. Institut za elektricno zavarivanje E.O.Patona, A.N. SSSR (for  
Dudko, Rublevski and Tiagin-Belaus). 2. Visoka tehnicka skola u  
Zagrebu, Zagreb (for Aleksijevic).

Country : CZECHOSLOVAKIA  
Category : Soil Science. General. J  
Abs Jour : RZhBiol., No 6, 1959, No 24572  
Author : Tiaglo, G.  
Inst : Czechoslovakian Academy of Agricultural Science.  
Title : A New Method for the Obtaining of Soil Monoliths.  
Orig Pub : Sbor Ceskosl. akad. zemed. ved, Rada-Rostl. vyroba, 1956, 29, No 3, 203-212  
Abstract : A device is described, by means of which a thin layer of soil is cut off under laboratory conditions from a soil monolith (measuring 25 x 25 x 105 cm). In a special frame the soil specimen is treated at average humidity with colorless nitrocellulose lacquer. The latter solidifies the soil, preserving the natural color of the soil horizons. The  
Card : 1/2



Country : CZECHOSLOVAKIA  
Category : Soil Science. General. J  
Abs Jour : RZhBiol., No 6, 1959, No 24572  
Author :  
Inst :  
Title :  
Orig Oub :  
Abstract : soil monolith, obtained in this manner, is  
kept under glass for a long time.

Card : 2/2

TJAPKIN, D.

A few words about pH meters. p. 17. Vol. 5, No. 1,  
Jan. 1956. TELEKOMUNIKACIJE. Beograd, Yugoslavia.

SOURCE: East European Accessions List, (EEAL) Library  
of Congress, Vol. 5, No. 8, August, 1956.

YUGOSLAVIA/Electricity - Semiconductors.

G-3

Abn Jour : Ref Zhur - Fizika, No 11, 1958, No 25500

Author : Tjapkin Dimitrije

Inst : Belgrade University, Yugoslavia

Title : Semiconductors in Nuclear Physics and Engineering

Orig Pub : Tehnika, 1958, 13, No 1, Elektrotehnika, 7, No 1, 12-16

Abstract : Examination of the problem of the investigation of radiation defects in semiconductors and of the use of the latter as dosimeters and radiation-energy converters.

Card : 1/1

YUGOSLAVIA/Electronics - Photocells and Semiconductors Device.

H

Abs Jour : Ref Zbur Fizika, No 11, 1959, 25562

Author : Tjapkin, Dinitrije

Inst : ~~Electronics and Semiconductors~~

Title : Production of Semiconductor Elements, Status and Prospects -- General Conclusions.

Orig Pub : Tehnica, 1958, 13, No 10, 236-239

Abstract : Data are given with respect to the volume of manufacture of semiconductor devices (diodes and triodes) and the trends in their development on a global scale. The status of manufacture of these devices in Yugoslavia is considered, and it is noted that the requirements of the industry during the five year period from 1959 to 1963 exceeds the capacity for the manufacture of semiconductor devices, primarily because of lack of sufficiently numbers of specialists. This leads to the conclusion that it is necessary to speed up the training of corresponding

Card 1/2

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YUGOSLAVIA/Electronics - Photocells and Semiconductors Device. H

Abs Jour : Ref Zhur Fizika, No 11, 1959, 25562

engineering and working staffs, particularly by introducing the necessary courses into the programs of the institutions of learning.

Card 2/2

COUNTRY : Yugoslavia E-2  
CATEGORY :  
ABS. JOUR. : RZKhim., No. 22 1959, No. 77605  
AUTHOR : Tjapkin, D. and Joksimovic-Tjapkin, S.  
INST. : Not given  
TITLE : Determination of the Purity of Powdered Silicon  
by Measuring the Electric Conductivity of the  
Electrolyte [sic]  
ORIG. PUB. : Tehnika, 13, No 10 (1958); Elektrotehnika, 7,  
No 10, 166-169 (1958)  
ABSTRACT : No abstract.

CARD: 1/1

TJAPKIN, D.

YUGOSLAVIA/Electricity - Semiconductors.

Abs Jour : Ref Zhur Fizika, No 8, 1959, 18189

Author : Tjapkin, Dimitrije; Skaperda, Nikola

Inst : University of Belgrade, Yugoslavia

Title : Arrangement for the Measurement of the Specific Electric Resistivity, Hall Coefficient, and Type of Carriers in Semiconductors.

Orig Pub : Tehnika, 1958, 13, No 10, Elektrotehnika, 7, No 10, 155-159

Abstract : Arrangement is described with eight probes for the measurement of the specific resistivity  $\rho$ , the Hall coefficient  $B$  and determining the type of current carriers in semiconductors. The instrument insures high accuracy of the inter-probe distance and ease in adjustment of the pressure of the probes against the sample.

Card 1/2

YUGOSLAVIA/Electricity - Semiconductors.

G

Abs Jour : Ref Zhur Fizika, No 8, 1959, 18189

The probes can be readily replaced as they are worn out. The value of  $\xi$  is measured with four probes at direct current. The arrangement makes it possible to measure  $\xi$  within 0.06 -- 0.0006 ohm-cm. The value of B is measured in a constant magnetic field with either four or two probes. The installation is reliable and can be used for the measurement of germanium and silicon specimens of various shapes. The results of the measurements with the aid of the arrangement described here agree with those obtained by others.

Card 2/2

- 83 -



TJAPKIN, D.

TJAPKIN, D.; Stefaniya, P. Current noises of carbon resistors. p. 10

Vol. 5, no. 3, Aug, 1956  
TELEKOMUNIKACIJE  
TECHNOLOGY  
Beograd

So: East European Accession, Vol. 5, no. 3, March 1957

YUGOSLAVIA/Nuclear Physics - Installations and Instruments.  
Methods of Measurement and Research

C

Abs Jour : Ref Zhur Fizika, No 2, 1960, 2825

Author : Tjapkin, D.A., Ilic, R.P.

Inst : Institute of Nuclear Sciences, "Boris Kidrich", Belgrade,  
Yugoslavia

Title : The Beam Current Integrator Without Discharging Cycle

Orig Pub : Bull. Inst. Nud. Sci., 1958, 8, No 144, 117-122

Abstract : The authors describe a current integrator with measurement limits of  $5 \times 10^{-4}$  --  $3 \times 10^{-12}$  amperes, intended for the measurement of intensity of a beam of charged particles. The measured current is applied to an electrometer amplifier (gain  $\sim 5,000$ ), to the output of which is connected an integrating capacitor C. When the voltage in the capacitor reaches  $+u_0$ , a discriminator

Card 1/2

YUGOSLAVIA/Nuclear Physics. - Installations and Instruments.  
Methods of Measurement and Research

C

Abs Jour : Ref Zhur Fizika, No 2, 1960, 2825

operates, and the pulse from it is applied to the winding of the electromagnetic relay. The relay reverses the polarity of the capacitor C, so that the next cycle consists of recharging the capacitor from  $-u_0$  to  $+u_0$ . The mechanical counter registers the number of pulses from the discriminator. The nonlinearity of the characteristics of the integrator is  $\leq 1\%$ . The maximum counting rate amounts to one count/sec. The instrument admits of a direct reading of the measured current along a scale of a pointer-type instrument. A total principal diagram and a photograph of the wiring of the integrator are shown.

Card 2/2

- 15 -

G

YUGOSLAVIA/Electricity - Semiconductors.

Abs Jour : Ref Zhur Fizika, No 2, 1960, 3779

Author : Skaperda, Nikola; Tjapkin, Dinitrije

Inst : The University, Belgrade, Yugoslavia

Title : A Pulse Method for Measuring the Lifetime of Minority Carriers in Germanium

Orig Pub : Tehnika, 1958, 13, No 10, Elektrotehnika, 7, No 10, 161-164

Abstract : A definition is given of the lifetime of minority carriers  $\tau$ , and the principal factors on which it depends are indicated. Five methods are briefly described for the measurement of  $\tau$  in germanium. Preference is given to the optical method.

Card 1/1

*BC*

Application of physical-chemical analysis to the investigation of peptization. I. H. Peptization of whey-flocc proteins. J. A. Borenstein and T. E. Takemura. *J. Am. Chem. Soc.*, 1960, 82, 361-377.—The peptizing action on wheat proteins of NaOH, KOH, and AcOH, alone or in pairs, has been studied by the methods previously described (A., 1959, 310). The presence of > 1 protein is indicated, and methods for their separation are suggested, and several types of salts include a series of R.T.

ASSOCIATE METALLURGICAL LITERATURE CLASSIFICATION



28

*The weight of greens and the formation of sugar. K. FJELLBERG. Lofv Utkravar 51, 328. Z. Zuckerind. technol. Rep. 57, 210 (1941). In a comparison of averages for several years, the formation of sugar is greater in the years with an abundant growth of greens than in the years of scanty greens. The exptl data, however, have never shown a real correlation between the wt of greens and sugar formation. When different varieties of the same season are compared, no correlation is found. Weekly analyses made upon 16 varieties of beets in Sweden from July to Nov. show the absence of this correlation. From July 25 to Nov. 11 the av. wt of greens from one variety was 250 g while the sugar formation during the same interval was 90 g. Other varieties showed 276 g greens with 101 g sugar, 313 g greens with 81 g sugar, and 315 g greens with 79 g sugar.*

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS		PROCESSING AND PROPERTIES INDEX		COMMON VARIABLE INDEX	
BC		<p>Weight of leaves and formation of sugar (in beets). K. TURNER (Z. Zuckerind. Czechoslov., 1933, 57, 216).—Experiments with 16 races of sugar beet over a no. of years, at the Swedish Sugar Beet Institute, Hillesbög, showed that in comparing the same race in different years there is a general parallelism between wt. of leaves and amount of sugar formed; but in comparing different races in the same year there is no relation between leaf growth and sugar formation. The effects of weather conditions on leaf growth are much the same for different races, but their effects on sugar formation are not so uniform.</p> <p>J. H. L.</p>		B-3-2	
ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION					
GROUP		SUBGROUP		SUBSUBGROUP	
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	



*Planting*

S.C. L.

Harvesting 2-year-old roots of kok-saghis after a preliminary removal of foliage. P. TUKAVKIN (vest. Sel'sk. Khoz., 1944, No. 8 0, 61-2; Hort. Khoz., 1946, 16, 100). Experiments made by the Siberian Forest Crops Research Institute in 1943 showed that a preliminary removal of the rosette part to the digging up of roots increased their rubber content. The figures obtained on a two-year-old plantation were as follows. If the rosette was removed 4 hours before harvesting the roots, their rubber content rose only from 11.5 to 11.9%. When, however, the removal was made 21 and 120 hours before digging, the increase in the rubber content was from 9.2 to 11.2% and from 9.2 to 10.7%, respectively. This method could be used with success on 2-year-old plantations on compact soil, and requires 4 man-days per hectare.

12-28.5

1946

TIJUKINA, M. N.

"The development of an accelerated methode of the anodic oxydation of aluminium alloys in sulphuric acid." Akomov, G. V., Tomashov, N. D., and Tiukina, M. N. (p. 583)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1942, Vol 12, No 11-12.

TJULPINA, A. F.  
V. F. OPOTSKI, Ukrain. CHEM. J., 1933, 8, 237-241

**COMMON ELEMENTS**

**MATERIAL MOE**

**COMMON VARIABLE MOE**

**1ST AND 2ND ORDERS**

**PROPERTIES AND PROPERTIES MOE**

**TOP AND BTH C-1001**

**BE**

**Iodine content of Black Sea algae.** A. S. KOMAROVSKI, A. F. TOLUPINA, and G. E. FISCHER (Ukrain. Chem. J., 1968, 14, 181-184).—The I content per 100 g. of dry substance of Black Sea *Phaeophyta* varied from 0.15 to 0.56 g.; other algae contained only traces of I. R. T.

**ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION**

**FROM SOURCE**

**COLLECT ONE ONLY LIST**

**GROUP**

**SOURCE MAP ONE ONE**

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**ALLOY**

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CZECHOSLOVAKIA

MASIAR, P.; SOVA, O.; TJUTCEV, N.; Department of Biochemistry, Institute of Experimental Biology, Slovak Academy of Sciences (Oddelenie Biochemie Ustavu Experimentalnej Biologie SAV), Kosice, Head (Veduci) Docent Dr P. MASIAR; Chair of Biochemistry, Medical Faculty PJ Safarik University (Katedra Biochemie Lekarskej Fakulty UPJS), Head (Veduci) Dr P. MASIAR.

"Protein Metabolism. I. "

Prague, Casopis Lekarů Ceskych, Vol 105, No 33, 19 Aug 66, pp 886 - 889

Abstract [Authors' English summary modified]: During the first days of protein deficiency a systematic drop in albumins and a concurrent rise of globulin fractions occur. Quantitative changes are noticed mainly in the alpha and beta globulins, which are found in the first 20 days of protein deficiency; a new fraction corresponding to the alpha globulin appears. Gamma globulin fraction changes very little. Total nitrogen decreases to about 75% of the initial value. 3 Figures, 2 Tables, 10 Western, 4 Czech, 1 Russian, 1 Hungarian reference. ( Ms. received Mar 66).  
1/1

- 4 -

TJUTCEV, Nikita (Kosice, Stara bastova 2.)

Flush method of blood pressure measurement in children (flush method).  
Cesk. pediat. 13 no.8:688-693 5 Sept 58.

1. II. detska klinika Karlovy university v Praze, prednosta prof. Dr.  
J. Houstek.

(BLOOD PRESSURE. determ.  
flush method in child. (Cz))

TJUTCEV, Nikita

Flush -- a new method for blood pressure measurement in children.  
Normal levels. Cask.pediat.15 no.12:1066-1071 D '60.

1. Okresny ustav narodneho zdravia v Kosiciach, riad. dr. S.Benedik.  
(BLOOD PRESSURE)

TJUTCEV, N.: LAD'AK, I.

The metabolism of protein substances in muscle tissue; a study of ninhydrin-positive substances isolated from nonprotein extracts from the heart of normal rats. Physiol. Bohemoslov. 13 no.6:565-570 '64

1. Department of Biochemistry, Medical Faculty, Safarik University, Kosice.



MASIAR, Pavel; TUCHOV, Nikita

Metabolism of protein substances in muscle tissue. II. Review of ninhydrin-positive substances in protein-free extracts from muscles of *Macaca rhesus* monkeys. Biologia (Bratisl.) 19 no.6:446-453 '64.

1. Katedra biochemie Lekarskej fakulty Univerzity P.J. Safarika v Kosiciach.

TJUTJUNNIKOV, J.B.; VOLKOV, J.M.; ORLIK, Miroslav

Prospects of coal chemical processing. Ropa a uhlie 5 no.7:  
222 J1.'63.

1. Koksarensky vyzkum, Vyzkumny a zkusebni ustav, Nova hut  
Klementa Gottwalda (for Orlik).

TKABLADZE, TS.P.

Relationship between the accumulation of tannins and some ecological and biological characteristics of plants; based on materials on the study of tannin plants of the Georgian S.S.R. Trudy Len. khim.-farm. inst. 12:285-296 '61. (MIRA 15:3)

1. Tbilisskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut Ministerstva zdavookhraneniya Gruzinskoy SSR.

(TANNINS)  
(GEORGIA--BOTANY, MEDICAL)

TKABLADZE, TS.P.; GEDEVANISHVILI, D.M., prof., red.; KANDELAKI, D.P.,  
red. izd-va; KHUTSISHVILI, V.V., tekhn. red.

[Biological evaluation of tannins and the amount of them in some  
tannin-bearing plants of Georgia] Biologicheskaya otsenka dubil'-  
nykh veshchestv i ikh sodержanie v nekotorykh tanidonosnykh ra-  
steniyakh Gruzii.  
(MIRA 15:6)

1. Chlen-korrespondent Akademii nauk Gruzinskoy SSR (for Gede-  
vanishvili).

(GEORGIA--BOTANY, MEDICAL) (TANNINS)

TKABLADZE, TS.P.

Comparative biological evaluation of astringents. Soob.AN  
Gruz.SSR 23 no.2:199-206 Ag '59. (MIRA 13:2)

1. Tbilisskiy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut. Predstavleno chlenom-korrespondentom Akademii  
D.M.Gedevanishvili.

(ASTRINGENTS)

USSR/Pharmacology. Toxicology. Cholinergic Drugs

v

Abs Jour : Ref Zhur - Biol., No II, 1958, No 51967

Author : Tkabladze Ts.P.

Inst : Tbilisi Chemopharmaceutical Institute

Title : The Pharmacological Properties of the Alkaloid of Vinca  
Herbacea

Orig Pub : Sb. tr. Tbilissk n-i khim-farmatsevt. i-ta, 1956, kn.,  
8, 91-100

Abstract : The pharmacological properties of the sulfate salt of the alkaloid of Vinca Herbacea (I) were investigated in frogs, rabbits, and dogs and compared to atropine. In lumbar (2) frogs subcutaneous injection or injection in the large cutaneous vein, I, in certain concentrations, fully removed the action of the vagus nerve upon the heart. Despite this, I slowed the heart rhythm, dilated the pupils, decreased secretion of saliva, caused by atropine. It follows that the specific properties of I are similar to those of atropine, but to a lesser degree. A hypotensive effect of I was also demonstrated. V.V. Berezhinskaya.

Card : 1/1

USSR/Pharmacology. Toxicology. Tranquillizers.

V

Abs Jour: Ref. Zhur. - Biol., No 22, 1958, 102852

Author : Tkabladze, Ts. P.

Inst : Tbilisi Scientific Research Chemicopharmaceutical  
Institute

Title : The Influence of Tealbine on the Inflammatory  
Process.

Orig Pub: Sb. tr. Tbilissk. n.-i. khim.-farmatsevt. in-ta,  
1955, 7, 81-89

Abstract: Experiments on air drying mesentery of frogs  
showed that the development of the inflammation  
was actually delayed by application of tealbine  
grains (I) on the surface of the mesentery. I  
also induced a similar effect in those cases in  
which the inflammation was induced on the mesen-  
tery or swimming membrane of the frog by appli-

Card 1/2

Molecular compounds of carboxylic acids and their derivatives with monohydric alcohols. Alexander E. Kac Chem. Listy 42, 169-71 (1948). According to the results of measurements on a fish-membrane osmometer, alcohols form mol. compds. with carboxylic acids. The no. of moles of alcoh. assocd. with acids depends on the mol. wt. of the alcoh. and on the no. and kind of acidic functions (HO, Cl, Br, NH<sub>2</sub> group, etc.). M. Hudlicky



CA

12

Mesohydric tautomerism of urea. Blahoslav Stehlik and Alexander Tkáč. *Chem. Zvesti* 3, 34-8 (1949). - According to Hunter's conception of the mesohydric tautomerism (C.I. 40, 1199<sup>1</sup>), by osmosis through a rush membrane, urea has been found to have the structure:  $\text{H-NH C(NH}_2\text{):O}$ . In a mixt. with HCl, where the unchelated N is coordinated to the H ion, the anomalous ammonium salt  $[\text{C(NH}_2\text{)}_2\text{H}_2\text{HCl}]$  has been found.

Jan Micka

CA

10

An osmometric study of chloroform and chloral hydrate.  
Blahoslav Stehlik and Alexander Tkáč (Slovak Tech  
Univ., Bratislava, Czech.). *Chem. Zvesti* 3, 161-68  
(1969).—It was found by the osmometric method with a  
ruth membrane (1) that the H atom of  $\text{CHCl}_3$  is polar and  
able to form a H bridge with the O atoms of aces. and (2)  
that in chloral hydrate the HO groups are closed into 2  
chelated rings by the bridge  $\text{O} \cdots \text{H} \cdots \text{Cl}$ . J. M.

C.A.

An osmometric study of thiourea. Alexander Tkáč  
(Slovak Tech. Univ., Bratislava, Czech.). *Chem. Zvesti*  
3, 372-8 (1949).—By using a rush membrane, the meso-  
hylic tautomerism of thiourea (I) has been confirmed.

I isomerizes as follows:  $(\text{H}_2\text{N})_2\text{CS} \rightleftharpoons \text{H}_2\text{NC}(\text{NH})\text{CSH}$ .  
The osmosis through the rush membrane in a soln. of  
thiourea appears to be neg.; the vol. of outgoing thiourea is  
greater than the vol. of  $\text{H}_2\text{O}$  coming in through osmosis.  
Jan Micka a

[illegible]

CA

118

The molecular structure of glycine and D-alanine.  
- Miroslav Stehlík, Alexander Tkáč, and Nadá Látková  
(Slovak Tech. Univ., Bratislava, Czech.). *Chem.  
Zvesti* 4, 53-9(1950).—The osmometric measurements,  
especially the indication of an anomalous hydrochloride,  
show that both glycine and D-alanine do not have the  
form of the dipolar ion but the form of strong polar hydro-  
gens of the amino group. These measurements agree with  
spectroscopic ones but differ in their explanations. The  
crystal structure is discussed.  
Jan Miska

~~Aleksander, Tkac~~, Alekzander,  
Czechoslovakia/Atomic and Molecular Physics - Physics of High Molecular Substances,  
D-9

Abst Journal: Referat Zhur - Fizika, No 12, 1956, 34513

Author: Aleksander, Tkac; Vojtech, Dello

Institution: Physical Chemistry Faculty of SVSP, Bratislava, Czechoslovakia

Title: Study of Aging of Natural Latex with the Aid of Infrared Spectroscopy.  
VI. Aging Under the Influence of Heat and Light; Discussion

Original Periodical: Chem. listy, 1955, 49, No 11, 1587-1597; Slovak

Abstract: The infrared-spectroscopy method was used to investigate the heat and light aging of latex, and the mechanism of aging is examined and certain relationships are established between oxidation, changes in structure, and the mechanical properties. The dependence of the velocity of oxidation on the concentration of the oxidation products during thermal and light aging indicates a chain mechanism of the reaction occurring in the rubber. The physical properties of aged latex depend, first of all, on the degree of destruction and a structurization not simply on the quantity of bound oxygen.

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- 1 -

✓ 4037 Study by infrared spectroscopy of the  
reaction kinetics of the ageing of natural rubber  
II Effect of light





T. Kac, a.

4

3147. Infrared studies of the ageing of rubber.  
VI. Ageing under the influence of heat and light.  
Discussion. A. TXAO, and Y. KELLO. *Chem. Listy*,  
1955, 49, 1537-97; *Chem. Abs.*, 1956, 50, 1350. Cf.  
this journal, 1956, abs. 2910. Both the heat and  
light-ageing (oxidation) rates depend on the con-  
centration of oxidised groups according to a relation  
which indicates a mechanism of branching chains  
with negative chain interaction. Light ageing has  
a superficial character and shows a more intensive  
initiation. The heights of kinetic curves represent  
a measure of the number of side chains formed  
during both ageing and vulcanisation. The physical  
properties depend predominantly on the degree of  
disaggregation and reaggregation, but not directly  
on the amount of structurally bound oxygen.

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M. A. YOUTZ

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T KAC, ALEXANDER

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M.A. YOUTZ  
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Reaction kinetics in the aging of natural rubber by infra-  
red spectroscopy. V. Aging accelerated by heat. Vojtech  
Kello, Alexander Tkáč, and Jolana Hriviková (Slovenská  
vysoká škola techn., Bratislava, Czech.). Chem. Listy 49,  
1433-41 (1955); cf. C.A. 49, 6639h. Heat aging of rubber  
between 60 and 160° as measured by the change of the no.  
of C=O, O-H, and C=C groups has been investigated by  
infrared spectroscopy. Contrary to light aging, heat aging  
proceeds uniformly in the whole specimen thickness at  
temps. above 90° but has a superficial character below this  
temp. The time curves of C=O and O-H groups run  
parallel, the only difference being that the no. of O-H  
groups decreases after reaching the max. The heights of the  
S-shaped kinetic curves depend on temp., show a min. in the  
range between 75 and 95°, and above a certain temp. limit  
remain const. (C=O above 120°, O-H above 100°). Ac-  
tivation energies calcd. from the induction periods are 21,200  
and 21,300 cal./mole, resp., for C=O and O-H groups;  
these values agree well with the activation energy calcd.  
from the temp. dependence of the max. rate of oxidation.  
B. Erdős

(2)

FIAD, ...

"Infrared spectrography, its application in research and industry."  
Chemicke Zvesti, Bratislava, Vol 6, No 2, Feb 1952, p. 111

SO: Eastern European Accessions List, Vol 3, No 10, Oct 1954, Lib. of Congress

TKÁČ, A.

6

Study of reaction kinetics in aging of natural rubber by  
infrared spectrophotograph. I. Experimental technique. V.  
Kellö and A. Tkáč (Slovenská Vysoká Škola Tech., Bratislava,  
Czech.) Chem. Zvesti 7, 129-130 (1953) - A rapid  
rotary method for prep. rubber films 0.01-0.1 mm.  
(± 0.001) thick is described; these films are useful for meas-  
uring the aging of rubber catalyzed by light, heat, and  
mech. treatment. I M

3

10-13-54 MEF

TKAC, A,

Chemical Abstracts  
May 25, 1954  
Rubber and Other Electromers

(5)  
Study of the reaction kinetics in the aging of natural rubber by infrared spectroscopy. II. Effect of light. A. Tkac and V. Kella (Slovenská vysoká škola technická, Bratislava, Czech.). Chem. Zvesti 7, 157-58 (1953).—Qual. changes in the infrared spectrum of raw rubber by exposing specimens 0.02-0.03 mm. thick to the light of a Hg-quartz lamp, are described. After a longer period of exposure to light, there is a new band at 5.64  $\mu$ , indicating aldehydic, ketonic (a band with the center 5.80-5.83  $\mu$ ), and carboxyl groups. OH groups, present in untreated raw rubber at 2.98-2.99  $\mu$ , are increased by exposure to light, showing a new intensive band at 2.80  $\mu$ . With unactivated rubber, a band is formed at 2.90  $\mu$  in the area of OH groups associated with H bridges, but the band belongs to unassociated OH groups. By exposure to light, the C=O, O-H, and C-O groups are increased, the CH<sub>2</sub>, CH, and isoprene groups are decreased, and C=C and a band at 10  $\mu$  are changed. Other factors affecting the aging of raw rubber by light are described. 61 references.  
Jan Micka

11-12-54

7/10/11

Study of reaction kinetics in the aging of natural rubber by infrared spectroscopy. II. Effect of light and antioxidants. V. Kelly and A. Dink (Slovenská vysoká škola techn., Bratislava, Czech.). Chem. Zvesti 7, 395-408 (1963); cf. C.A. 48, 6153d. Reaction charts showing the relation of C=O groups to the time of exposure to infrared light were studied. Bz<sub>2</sub>O<sub>2</sub>, phenyl-2-naphthylamine, o-nitrophenol, m-nitrophenol, p-nitrophenol, 1,2,4-dinitrophenol, o-aminophenol, benzoquinone, quinhydrone, hydroquinone, pyrogallol, Ni diethyldithiocarbamate, benzidine, urea, thiourea, and thyroxine were divided into inhibitors, retarders, and initiators of oxidation. A study of p-benzoquinone, quinhydrone, and pyrogallol shows that the antioxidant effect is in close relation with the oxidation-reduction potential system: rubber-O-antioxidant. The natural antioxidants and natural oxidation-reduction system in raw rubber form a natural oxidation-reduction system which det. the qualities of natural raw rubber. The results of spectrographic measurements show that antioxidants participate directly on the reaction mechanism, and that the most important factor is the rapidity of formation of free radicals and their reaction with other radicals and neutral molcs.

Jan Micka

# CZECH

Reaction kinetics in the aging of natural rubber by the infrared spectrograph. IV. Effect of the wavelength of radiation and the temperature on aging by light. A. Tkáč, V. Kellö, and J. Hrivňáková (Slovenské vysoké školy techn. v Bratislave, Ústav kábelov a izolantov, Bratislava, Czech.). *Chem. Zvesti* 8, 3-13 (1954); cf. *C.A.* 48, 8574e, 8153b, 11101d.— The interrelation of the effect of the intensity of radiation and temp. on the aging of rubber was studied. The upper limit of the effectiveness of light is in an area 4380 Å. Increasing temp. accelerates oxidation considerably, but it is retarded by increasing intensity of irradiation. Calcul. analysis shows an exponential relation of the length of the induction period and the intensity of radiation at const. temp. and a linear relation of the height of the reaction curves and temp. with const. radiation. In the aging of natural rubber, there is, at the same time, an oxidative cleavage and branch chaining (vulcanization). Heat accelerates oxidation, and radiation accelerates vulcanization.

Jan Míčka

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APPROVED FOR RELEASE: 07/16/2001

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TKAC, A.

✓ A study by infrared spectrography of the reaction kinetics  
of the aging of natural rubber. II. Experiments on the  
effect of light: A. Tkáč and V. Kellö (Tech. High School,  
Bratislava, Czechoslovakia) *Rubber Chem. and Technol.* 28, 383-411  
(1955).—See *C.A.* 48, 6153c. CH

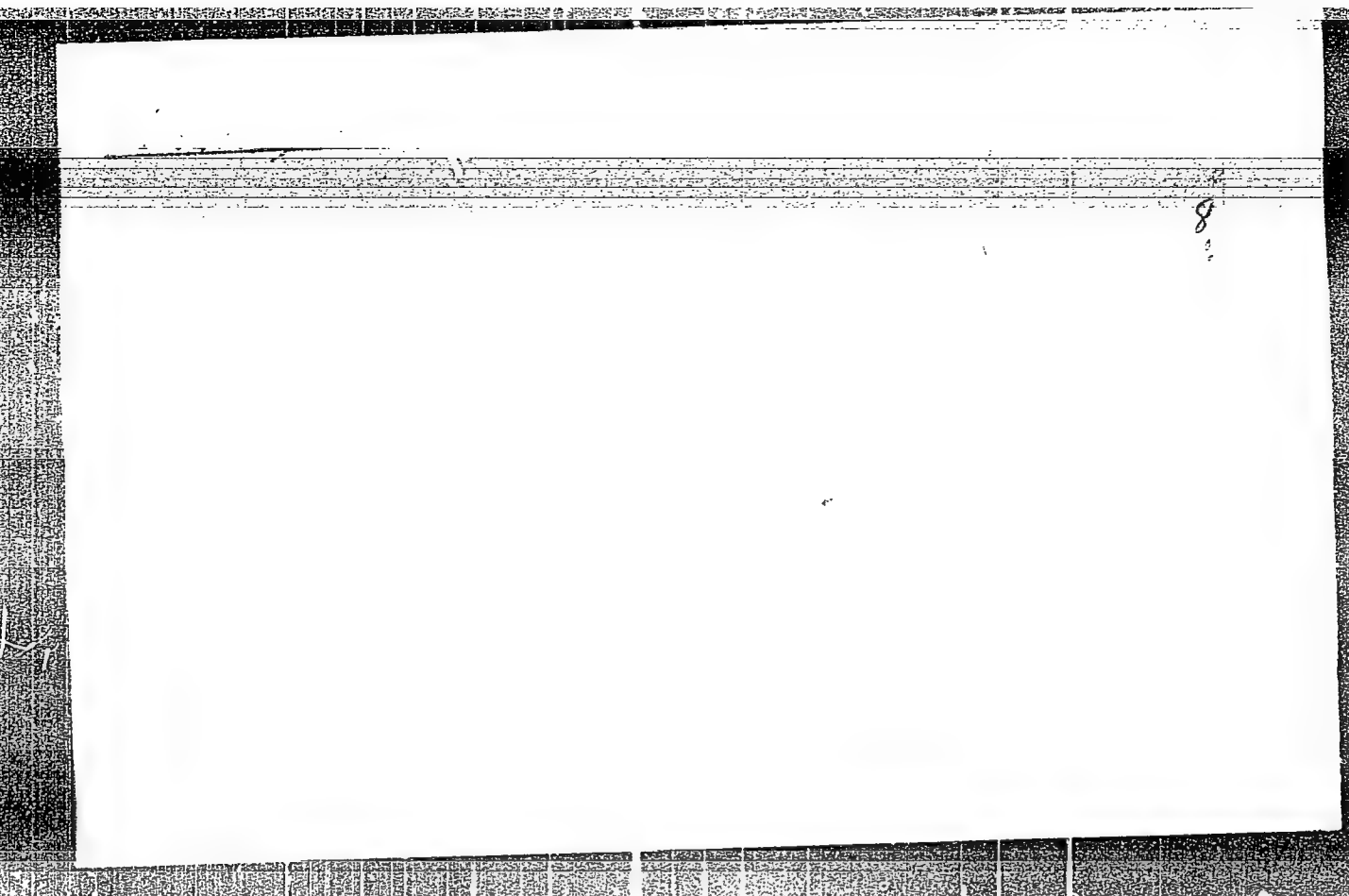
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TKAC, A.: HRIKOVA, J.: KELLO, V.

"Infrared studies on the aging of rubber. V. aging accelerated by heat."

Chemické Listy. Praha, Czechoslovakia. Vol. 49, no. 10, Oct 1955

Monthly list of East European Accessions (EEAI), LC, Vol. 8, No. 6, Jun 59, Unclas

TKAC. A.

Category : CZECHOSLOVAKIA/Optics - Spectroscopy

K-6

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 5121

Author : Kello, V., Tkac, A., Hrivikova, J.

Title : Study of-Aging of Natural Rubber using Infrared Spectroscopy. V.  
Thermal Acceleration of Aging

Orig Pub : Sb. chekhosl. khim, rabot, 1956, 21, No 2, 281-290

Abstract : No abstract

Card : 1/1

TKAC, Alexander

Koloidna chemia. (Colloidal Chemistry. a university textbook. illus., bibl., tables)  
Bratislava, SVTL, 1957. 277. p. Vol. 206 of the series Docasne vysokoskolske  
ucebnice (Temporary university textbooks).

Bibliograficky katalog, CSR, Slovenske Kihy, Vol. VIII. 1957. No. 9. p. 277.

CZECHOSLOVAKIA / High Molecular Chemistry.

I

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 14087.

Author : Tkac, A.; Kello, V.; Ulicky, L.

Inst : Not given.

Title : Investigation of Structure During Rapid Hardening  
of Thiocol.

Orig Pub: Chem. zvesti, 1958, 12, 391-400.

Abstract: Hardening of thiocol connected with its crystallization is accelerated in the presence of products of decomposition of tetrasulphides formed during thermal decomposition or spontaneous acidification of S linked to the tetrasulfide groups. A comparison of the infrared spectra, especially of the prepared samples with high content of tetrasulfide noted for significant resistance to hardening, and of technical samples, showed a difference in compo-

Card 1/2

• CZECHOSLOVAKIA / High Molecular Chemistry. i

Abs Jour: Ref Zhur-Khimiya, 1959, No 4, 14087.

Abstract: sition, quantity of bound  $H_2O$ , quantity of products of decomposition and in the content of side-chain oxides. X-ray analysis shows the presence of cyclically bound S. -- Authors' resume.

Card 2/2

145

~~Kelly, A.~~ TKAC, A.

Distr: hE2c(j)

The reasons for rapid hardening of thiokol. A. Thak, V. Kello, and L. Ulicky (Slovenská vysoká škola technická, Bratislava, Czech.). Chem. zvesti 12, 391-400 (1958) (German summary).—By studying the factors causing a rapid hardening of thiokol (I) of domestic origin (Czech.), it was detd. that the loss of plasticity and elasticity is caused by polymer crystn. The decompn. products of Na<sub>2</sub>S<sub>2</sub> formed by thermal reaction or by spontaneous oxidation of S linked to Na<sub>2</sub>S<sub>2</sub> accelerate the process of crystn. By prepg. I from Na<sub>2</sub>S<sub>2</sub> soln. of definitive concn., a product resistant to rapid hardening is formed which by infrared absorption spectral analyses has shown to be different in the amt. of bound H<sub>2</sub>O, decompn. products, and oxidation impurities from a rapid hardening tech. pure product. The structural analyses indicate the presence of cyclic bound S which is in agreement with the results of x-ray structural analyses.

Ian Micka

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TKAC, a

Distr: 4E20(1) // 4E3b

Correlations between the degree of cross-linking and the degradation of natural rubber. A. Tkáč and V. Kello (Tech. Hochschule, Bratislava, Czech.). J. Polymer Sci. 31, 291-300 (1958) (in German); cf. C.A. 50, 1350f, 17507i. The rate of oxidn. of natural rubber is measured by observing the increase  $\Delta A$  of the extinction coeff. for infrared absorption at  $1720 \text{ cm}^{-1}$  (carbonyl) and  $3600 \text{ cm}^{-1}$  (hydroxyl). The relative concn.  $\eta$  of oxidized groups is taken as  $\Delta A / \Delta A_0$ , where  $\Delta A_0$  is the value of the increase of the extinction coeff. at infinite time. The rate of oxidn.  $d\eta/dt$  is found to obey an equation of the form  $d\eta/dt = [k/b][1 - \exp(-b\eta)]/(1 - \eta)$ , where the const.  $k$  is related to the rate of branching (leading preponderantly to oxidn.) and the const.  $b$  characterizes the rate of recombination of radicals for chain termination (leading preponderantly to cross-linking). The total amt. of cross-linking increases with increase of  $b/k$ . In all cases, as predicted by the equation,

the rate of oxidn. rises from zero to a max. and falls to zero again as the concn. of oxidized groups increases. Values of  $k$  and  $b$  detd. from exptl. observations are used to give information about the sep. phases of the reactions involved in the thermal and photochem. aging of rubber under various conditions. In the aging of extd. unvulcanized rubber at temps. from 80 to 150°, the rate of oxidn. and of termination both increase with temp. but the degree of cross-linking decreases. Light produces very effective cross-linking at room temp.; raising the temp. increases the oxidn. greatly at the expense of the termination, but vulcanization mixts. contg. components forming C—C bridges are much more effective. The effects of accelerators, of antioxidants, and of

Cu as an oxidn. catalyst are investigated. In rubber, in the presence of pure N (3 atm., 130°) and in the absence of vulcanizing ingredients, radicals of long life are formed and greatly influence the subsequent oxidative degradation. Increase of time at 130° greatly decreases the induction period of the subsequent oxidn. and increases the max. possible degree of oxidn. Lawrence A. Wall

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99 (N/3)  
2

TKAC, A.

Distr: 4E3d

Physicochemical study of petroleum crude oil fractions. V. Reaction kinetics of oxidation. A. Tkáč and V. Kello. (Akademická vysoká škola tech., Bratislava, Czech.). Chem. zvesti 13, 408-414 (1959) (German summary); cf. C.A. 34, 2700c. The reaction kinetics were studied of the oxidn. of the mixt. of hydrocarbons present in domestic crude oils and their lubricating oil distillates, chromatographic fractions of cable oils, and aromatic exts. from Saratov crude oil. Quant. spectrographic analysis of the changes in the hydrocarbon structure (which had been detd. by the n-d-mol. wt. method) shows a different character of the reaction kinetics for different compns. of the hydrocarbon mixt. The oxidn. of the alkane-naphthene fractions is affected by the rate of diffusion of O and of the oxidn. products, but this does not occur in the presence of aromatic components. The effect of diffusion was considerably reduced by exposing samples in thin layers. The oxidn. of the alkane-naphthene fractions can be expressed by the equation  $\Delta E_t = a + k \cdot e^{at}$ , where  $\Delta E_t$  is the change in the extinction; and  $a$  and  $k$  are const., corresponding to the chain mechanism of oxidn. of the degenerated branching type. With increasing concn. of aromatic fractions the oxidn. proceeds at a const. rate without induction period; and oxidn. of the alkane-naphthene fractions is inhibited. Fractions contg. a major amt. of condensed and unsym. di- and trisubstituted aromatic hydrocarbons are as much as 20 times more effective as in-

hibitors than complex aromatic-naphthenic systems and more highly substituted monocyclic aromatic compds. Highly active inhibitors are present in aromatic exts. of Saratov crude oil. The activation energy of the oxidn. of pure alkane-naphthene fractions is 33 kcal/mol., and in the presence of the aromatic components (5% of aromatic C) decreases to 0 kcal./mol. Polar oxidn. products of aromatic hydrocarbons are insol. in the alkane-naphthene hydrocarbons and are pptd. whereas oxidn. of the alkane-naphthene type hydrocarbons leads to the formation of carboxyl groups. VI. The correlation of composition, stability, and dielec. properties of hydrocarbons from domestic crude oils. A. Tkáč, V. Kello, and V. Palo. Ibid. 515-23. The oxidn. products of alkane-naphthene and aromatic chromatographic fractions vary in their effect on the dielec. properties of insulating oils. Trace amts. of oxidn. products of aromatic compds. of definite structure considerably increase the loss angle, but even higher concns. of alkane-naphthene products affect the loss angle to a lesser degree. Mixts. contg. complex aromatic-naphthenic compds. and more highly substituted aromatic hydrocarbons with long aliphatic chains showed optimum oxidn. stability and elec. properties.

Jan Míček

TKAC, A.

Distr: 4E2c(j)/4E3b

Mean life of free radicals in solid natural rubber. A.  
Tkáč and V. Kellö (Slovakian Coll. Technol., Bratislava,  
Czech.), *Trans. Faraday Soc.* 55, 1211-20 (1959); cf. C.A.  
49, 6639h; 50, 5317i, 10337d. Free radicals were gener-  
ated in solid films of natural rubber 20-30  $\mu$  thick on NaCl  
plates when heated in an autoclave for  $\sim 1000$  min. at  $140^\circ$ .  
The mean life of the free radical was detd. by a kinetic an-  
alysis of the subsequent oxidn. reactions. Radicals of  
relatively long life formed only in the presence of natural  
antioxidants. In the absence of antioxidants, heat-treatment  
reduced the sensitivity towards oxidn., a result which was  
explained by cross-linking with rapid removal of the radi-  
cals. Victor R. Deltz

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1-2-2 (NB)  
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TKAC, A.

Physical and chemical studies on the oil fractions of crude petroleum. III.  
Qualitative analysis of infrared spectroscopy. (To be contd.) p. 396.

CHEMICKÉ ZVESTI. (Journal on applied chemistry issued by the Slovak Academy of  
Sciences and the Slovak Chemical Society. Monthly.)  
Bratislava, Czechoslovakia, Vol. 13, No. 7/8, July/Aug., 1959.

Monthly List of East European Accessions, (EEAI), LC, Vol. 8, No. 12, Dec. 1957.  
Uncl.

5

Physicochemical study of oil fractions from crude oil. I. Method and experimental technique. V. Kello, V. Palo, and A. Tkáč (Slovenská vysoká škola techn., Bratislava, Czech.). *Chem. zvesti* 13, 265-71 (1959) (German summary). — Lubricating oil distillates from Gbely (Slovakia) crude oil were evaluated as raw materials for cable oil by means of the n-d.-mol. wt. method, elementary analysis, viscosity and viscosity index, dielec. losses and dielec. const., insulating properties, and infrared absorption spectroscopy. All tests were applied to chromatographic fractions of the distillates. For kinetic studies by infrared spectroscopy, oxidation of a thin hydrocarbon layer (1 min.) was used. Jan Mleka

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TKAC, A.

"Physical and chemical studies on the oil fractions of crude petroleum. I. Methods and experimental technique."

CHEMICKÉ ZVĚSTI, Praha, Czechoslovakia, Vol. 13, No. 5, May 1959.

Monthly List of East European Accessions ( EAI ), LC, Vol. 8, No. 9, September 1959.

Unclassified.

TKAC, Alexander, doc, dr., inz.

Stabilization of electric insulation oils by vapors of  
colophonic acids (I). Theoretical part. Chem. zvesti 16 no.8:601-  
611 Ag '62.

1. Vedecky ustav fyzikalnej chemie makromolekul a uhlovodikov pri Katedre  
fyzikalnej chemie, Slovenska vysoka skola technicka, Chemicky  
pavilon, Bratislava, Kollarovo namesti 2.

TKAC, Alexander, doc., inz.

Stabilization of electric insulation oils by vapors of colophonic acids (II). Technical realization. Chem. zvesti 16 no.8:612-624 Ag '62.

1. Vedecky ustav fyzikalnej chemie makromolekul a uhlovodikov pri Katedre fyzikalnej chemie, Slovenska vysoka skola technicka, Chemicky pavilon, Bratislava, Kollarovo namesti 2.



Z/043/63/000/002/001/003

AUTHORS: Tkač, A., Frait, Z., Ondris, M.

TITLE: Determination of the level of macroradicals by the method of electron spin resonance during thermal decomposition of polymers.

PERIODICAL: Chemické zvesti, <sup>17</sup>no. 2, 1963, 81-94.

TEXT: The method of electron spin resonance was used in the study of the formation and decomposition of macroradicals of the polydiene type, (in natural rubber and polyisoprene) in solid samples within the temperature limits of - 150°C and + 200°C. Suitable apparatus for the desorption of gases from samples is described. High vacuum and an inert gas are used for the purpose. A description of the arrangement used by the authors for their measurements is given. It provides electrical heating and quick cooling of the samples by liquid nitrogen. The thermal generation of the free radicals takes place in a resonance chamber of the mode H<sub>012</sub> maintained at a constant temperature. An inert gas flows through the chamber introduced through a stainless steel duct provided with a mica orifice. The apparatus allows cooling of the sample from the temperature at which the radicals are formed to the temperature of liquid nitrogen while continuous indication of the intensity of the changes in

Card 1 of 3

Z/043/63/000/002/001/003

Determination of the level ....

the resonance signals is maintained. Quick cooling avoids changes in the composition of the sample that would occur during slow cooling. The resonance signal which is formed by the absorption of the microwave component of 9200 Mc<sub>g</sub> in a magnetic field of 2900 Oe maintains a "g" factor of 2.2 and is the result of the inner mechanism of the processes that take place during the degradation of polydienes at elevated temperatures. With an increase in temperature the original width of the spectrum narrows from approx.  $\Delta H$  300-200 Oe to 100-80 Oe; this fact is connected with the weakening of the interaction forces. The use of a stable free radical  $\alpha$ ,  $\alpha'$  diphenyl- $\beta$ -picrylhydrazyl for calibration purposes made possible determination of the shift of the center of symmetry by approx. 100-150 Oe towards the region of the free electron when the sample was heated to 200°C. This results in a change of the "g" factor from 2.23 to 2.14. This process is reversible. The signal does not change its position during cooling from room temperature to -150°C. The technique of quick cooling makes possible, when using samples contaminated by oxygen, to observe a distinct peroxydic doublet in the region of the free electron, even in a case where the level of these radicals at higher temperatures is in the area of the limits of the sensitivity of the apparatus ( $10^{12}$  free spins in 0.1 grams of sample).

ASSOCIATION: Vědecký ústav fyzikální chemie makromolekul a uhlovodíků při Katedře  
Card 2 of 3

Z/043/63/000/002/001/003

Determination of the level....

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AUTHORS: Fuks, M. Ya., Tkach, A. Ya.

TITLE: X-ray Diffraction Studies of Stresses of the First Kind in Nitrided Steel (Rentgenograficheskoye issledovaniye napryazheniy I roda v azotirovannoy stali)

PERIODICAL: Tr. Kharkovsk. politekhn. in-ta, 1958, No 14, pp 195-202

ABSTRACT: Specimens of steels 38, KhMYuA, and 20 were investigated. After nitriding, the residual stresses were determined by the method of oblique exposures; this involved X-ray diffraction patterns obtained in the back-reflection camera for three different positions of the surface of the specimens, one perpendicular to the primary bundle of rays and the other two at angles of  $45^\circ$  with respect to the beam. The lattice parameters of the  $\alpha$  and  $\gamma$  phase were measured under  $\text{Cr-K}_\alpha$  radiation. The employment of large reflection angles ( $78^\circ$ - $80^\circ$ ), photometric evaluation of the lines, etc., made it possible to determine stresses with an accuracy of 7-10 kg/mm<sup>2</sup>. Results of an investigation are presented which demonstrate that compressive residual stresses having a magnitude of up to 40-50 kg/mm<sup>2</sup> are

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X-ray Diffraction Studies of Stresses of the First Kind in Nitrided Steel SOV/137-59.3-6697

present in the nitrided layer. It was established that the stresses in the phase  
are somewhat smaller than those in the  $\alpha$  phase.

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Card 2/2

DVORNIKOV, A.G. [Dvornikov, O.H.]; TKACH, B.I.; SHTANCHENKO, M.S.;  
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